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CLAIMS

1. A self-contained well intervention system for use with a well intervention tool, said system comprising:

5 a well intervention housing having a tool magazine having a magazine housing, at least one magazine pocket for storing at least one deployable tool therein and a magazine chamber for assembling an intervention tool string therein,

10 a valve housing coupled to said magazine housing, said valve housing having a detachable valve means coupled thereto, said well intervention housing and said valve means each having a coupling means for coupling the intervention housing and said valve means to a top portion of a subsea xmas tree,

15 said well intervention housing, valve housing and valve means defining an intervention system throughbore for permitting passage of intervention tools,

20 tool selection and deployment means coupled to said well intervention housing and being remotely operable from the surface for selecting and retrieving a tool from said magazine and for deploying said tool through said intervention system throughbore into a wellbore.

2. A well intervention system as claimed in claim 1 wherein said magazine includes a plurality of tool
25 compartments for receiving and storing a plurality of tools selectable from the surface.

3. A well intervention system as claimed in claim 1 or claim 2 wherein said intervention system includes a tool support means for supporting a selected tool permitting
30 at least one other tool to be selected and coupled to said supported tool to provide a deployable tool string of at least two tools.

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4. A well intervention system as claimed in any one of claims 1 to 3 wherein said tool selection and deployment means includes a rotatable drum having a length of slickline or wireline wound thereon, a sheath for guiding slickline or wireline from the drum to the tool and coupling means for coupling the slickline or wireline to the tool.

5. A well intervention system as claimed in claim 4 wherein said rotatable drum is coaxially mounted on said central bore.

6. A well intervention system as claimed in claim 4 or claim 5 wherein at least two separate lubricator conduits are provided, one conduit coupled between said drive housing and said sheave for conveying wire from the rotatable driver to the sheave, and another lubricator conduit coupled between the sheave and said tool magazine for deploying a tool string and wire from said sheave.

7. A well intervention system as claimed in claims 3 to 6 wherein said tool selection and deployment means includes coupling means adapted to be operated from the surface to retrieve a selected intervention tool from said magazine and to couple the selected tool to at least one other intervention tool in order to create a tool string to run the tools into the well, the coupling means also being actuatable from the surface to de-couple the tools to permit said tools to be replaced into the magazine.

8. A well intervention system as claimed in any preceding claim wherein said tool magazine comprises a magazine housing, a plurality of tool magazine pockets coupled to and disposed about said housing, said tool magazine pockets each being adapted to receive at least

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one respective tool.

9. A well intervention system as claimed in claim 8 wherein said tool magazine pockets are radially disposed about said housing.

5 10. A well intervention system as claimed in claim 8 or claim 9 wherein said magazine pockets are releasably coupled to said housing whereby a particular magazine pocket can be removed and replaced by a blank plate means so as to vary the number of magazine pockets being
10 deployed on a full magazine.

11. A well intervention system as claimed in claim 8 or claim 9 wherein said magazine products and selectively sealable and disconnectable from said magazine housing, whereby the same magazine product or a different product
15 is connectable to said magazine housing.

12. A well intervention system as claimed in any preceding claim wherein said tool magazine and said magazine pockets each have remotely actuatable means for moving a tool stored in the magazine pocket from a
20 position of storage in said magazine to a coupling position for coupling to the tool selection and deployment means to assist the tool to be coupled to said tool selection and coupling means.

13. A well intervention system as claimed in claim 12
25 wherein said remotely actuatable means are used to lower the tools back into respective magazines after the tool has been used in well intervention.

14. A well intervention system as claimed in any preceding claim wherein said magazine actuating means are
30 preferably provided by hydraulically operated rams, each hydraulically operated ram being associated with a respective magazine pocket.

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15. A well intervention system as claimed in any one of claims 1 to 13 wherein the magazine actuating means are provided by electrically or mechanically operable rams, each ram being associated with a respective magazine pocket.
16. A well intervention system as claimed in claim 1 wherein said valve means is coupled to said housing by locking means, said locking means being remotely actuatable from the surface.
17. A well intervention system as claimed in claim 16 wherein said locking means is hydraulically, mechanically or electrically operated.
18. A well intervention system as claimed in claim 17 wherein said locking means are operable by an ROV.
19. A well intervention system as claimed in any one of claims 16 to 18 wherein said locking means are provided by a plurality of moveable dogs which pass through said valve housing and engage with said valve means.
20. A well intervention system as claimed in any one of claims 16 to 19 wherein said coupling means for coupling said valve means to the wellhead includes locking means for locking said valve means to the interior of the wellhead.
21. A well intervention system as claimed in claim 20 wherein said locking means is an axially moveable sleeve or mandrel and moveable dogs, whereby in response to axial movement of said sleeve the dogs are radially displaced to engage an inner profile of said wellhead and lock said valve means to said wellhead to allow the well intervention housing to be removed.
22. A tool selection and deployment means for use with a self-contained well intervention system, said tool

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selection and deployment means including remotely actuable coupling means for controlling said tool selection and for selecting a particular intervention tool from a magazine for coupling the tool to a tool string for deployment in a well, said coupling means being adapted to engage with an upper portion of the respective deployable tool to secure said deployable tool to said tool string.

23. Tool selection and deployment means as claimed in claim 22, wherein said tool selection and deployment includes support means for supporting at least one selected tool in a bore and allowing said coupling means to be separated from said tool to retrieve a further tool selected from said magazine to create a tool string with at least two deployable tools therein, said coupling means and said tool support means permitting separation of said selected tools after well intervention and restoring said tools in their respective magazines.

24. Tool selection and deployment means as claimed in claim 22 wherein said tool selection and deployment means includes a rotatable drum having a length of slickline or wireline wound thereon, a sheave for guiding slickline or wireline from the drum to the tool and coupling means for coupling the slickline or wireline to the tool and drive means.

25. Tool selection and deployment means as claimed in claims 22, 23 or 24 wherein said drum is coaxially mounted on said central bore.

26. Tool selection and deployment means as claimed in any one of claims 22 to 25 wherein at least two separate lubricator conduits are provided [one conduit coupled to between said drum housing and said sheave for conveying

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wire from the rotatable driver to the sheave, and another lubricator conduit coupled between the sheave and said tool magazine for deploying a tool string and wire from said sheave].

5 27. Tool selection and deployment means as claimed in claim 26 wherein said first lubricator conduit is a small bore section.

28. Tool selection and deployment means as claimed in any one of claims 22 to 27 wherein said rotatable drum
10 and said tool string are disposed within a common pressurised housing.

29. Tool selection and deployment means as claimed in any one of claims 24 to 28 wherein said rotatable drum and spool arrangement is mounted coaxial with said
15 wellbore and driven from an external drive.

30. Tool selection and deployment means as claimed in claim 28 or claim 29 including a mechanical drive system for rotating said rotatable drum, said mechanical drive system being located outside said pressure container
20 housing.

31. A tool magazine for use with a self-contained well intervention system, said tool magazine comprising a magazine housing, a plurality of magazine pockets coupled to said tool magazine, each magazine pocket being adapted
25 to receive a respective well intervention tool and each magazine pocket having actuation means for moving said tool from the magazine pocket to a position for engagement with a tool coupling means.

32. A tool magazine as claimed in claim 31 wherein said
30 magazine pockets are radially arranged around said magazine housing.

33. A tool magazine as claimed in claim 31 or claim 32

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wherein said magazine pockets are partially inclined to a well axis.

34. A tool magazine as claimed in claim 31, 32 or 33 wherein said magazine housing is substantially coaxial
5 with the wellbore axis and each magazine pocket is adapted to contain an independent tool holder which is moveable to cross said wellbore axis.

35. A tool magazine as claimed in any one of claims 31 to 34 wherein the length of each magazine pocket is
10 adjustable to accommodate a variety of different tool lengths.

36. A tool magazine as claimed in any one of claims 31 to 35, each magazine pocket having remotely actuatable means for moving a tool stored in a magazine pocket for a
15 position of storage in said magazine to a coupling position for coupling to the tool selection and deployment means to assist the tool to be coupled to said tool selection and coupling means, said coupling position being substantially aligned with the vertical axis of the
20 wellbore.

37. A tool magazine as claimed in any one of claims 31 to 36 wherein the lower part of each pocket contains a hot-stab mechanism to allow coupling of a device for interrogation of logging tools.

25 38. A tool magazine as claimed in any one of claims 31 to 37 wherein at least one of said magazine pockets is sealable by barrier seal to allow the tool in the magazine pocket to be changed by removing the magazine pocket from the magazine housing or removing the tool
30 from the magazine pocket and replacement by another tool.

39. A tool magazine as claimed and any one of claims 31 to 38 wherein said magazine pockets are releasably

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coupled to said housing whereby a particular magazine pocket can be removed and replaced by a blank plate so as to vary the number of magazine pockets being deployed in a magazine.

5 40. A well intervention system as claimed in claim 1 wherein said valve means is capable of being either a) retrieved with the system or b) remaining locked onto wellhead.

41. A well intervention system as claimed in claim 1
10 wherein said system incorporates a further well barrier wholly within the pressure boundary of the system.

42. A well intervention system as claimed in claim 1 wherein said detachable valve means is provided by an apertured ball valve.

15 43. A coupling system for use with a well intervention system for coupling tools disposed in the magazine of said well intervention system and for disposing said selected tools in an intervention tool string for use in well intervention, said coupling system comprising:

20 a coupling member adapted to be coupled to a wireline, said wireline being coupled to a rotatable winch drum which is controllable from surface to vary the position of the coupling means in said magazine;

a coupling head disposed on each deployable tool,
25 said coupling head being disposed in a coupling position in response to the tool being selected and moved to a said make-up position;

moveable support means within said magazine having shoulders for abutting said coupling member and for
30 abutting said selected tool coupling head, the tool coupling means and the selected tool each having spring-biased latching means moveable between a first unlatched

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position when not in said make-up position to a second latching position when in said make-up position, whereby said coupling member is latchable to said coupling head of a respective tool in said make-up position.

5 44. A coupling system as claimed in claim 43 wherein the spring-biased latching means of the coupling head on each of the tools comprising a plurality of circumferentially disposed pivotable collet fingers which are biased into a first unlatched position when uncoupled
10 and are biased into a second latching position when said coupling member and said coupling member to connect the coupling head of the respective selected tool.

45. A lubricator system for use with a well intervention system comprising:

15 at least two separate lubricator conduits, a sheave disposed between said conduits, one conduit being of relatively small bore for receiving slickline or wireline, the other conduit being of relatively large bore for running a well tool for use in a well
20 intervention system.